Data Storage

Representing Images

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Representing Images

Pixel

- ✓ Collection of dots – Pixel short for Picture Element.

- ✓ Appearance of each pixel is encoded to form bit map.

- ✓ Many display devices, printers work on Pixel concept.

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Encoding Methods

Pixel to bit map
- ✓ In black and white images, each pixel is represented as one bit – e.g. 0 for black and 1 for white
- ✓ Often used in Facsimile

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Encoding Methods

Handling shades

- ✓ 8 bits
- ✓ Variety of shades of grayness.

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Encoding Methods

Colorful Images

RGB encoding

✓ One byte for Red, Green, and Blue

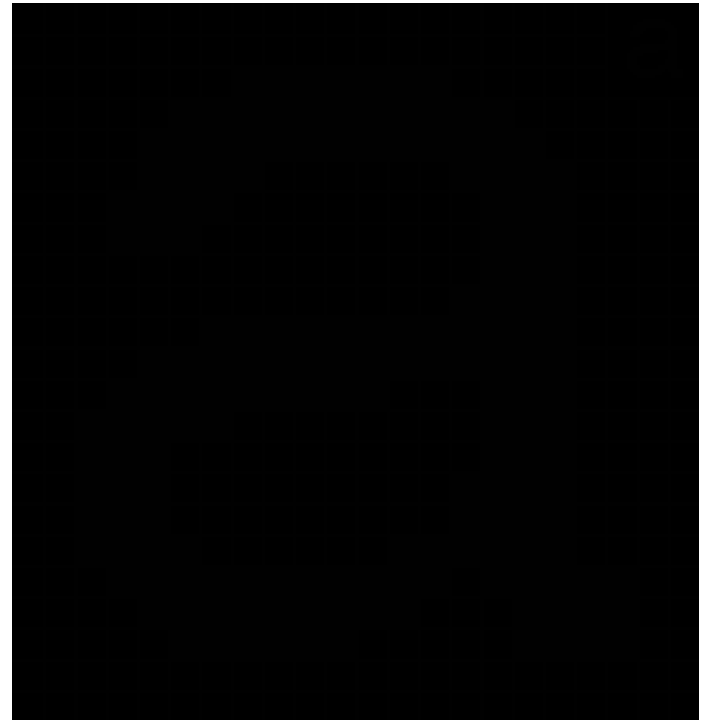✓ Brightness Chrominance

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Encoding Methods

Brightness Chrominance

- ✓ One brightness component and two color components.
- ✓ Brightness component= Pixel's luminance (sum of red, green, and blue)
- ✓ Blue Chrominance and Red Chrominance
- ✓ Difference between luminance and amount of blue or red

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Bit map issues

Scaling of Images

- ✓ Scaling to a larger size needs more pixels
- ✓ Digital Zoom

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Alternative Method

Geometric Structures

- ✓ Collection of lines and curves
- ✓ Using Analytical Geometry
- ✓ Technique: How geometric structures should be displayed rather Pixel reproduction

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Geometric Structures

Scalable Fonts

- ✓ TrueType by Microsoft and Apple
- ✓ PostScript by Adobe
- ✓ Also popular in Computer Aided Design (CAD)

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Summary

Representing Images

- ✓ Pixel
- ✓ Bit map
- ✓ Brightness Chrominance
- ✓ Geometric Structures

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